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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/766,914

01/30/2004

Shinya Kato

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EXAMINER

HIRUY, ELIAS

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/766,914

Applicant(s)

KATO ET AL.

Examiner

Elias B. Hiruy

Art Unit

2837

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**Priority**

1. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

**Information Disclosure Statement**

2. An initialed and dated copy of Applicant's IDS form 1449 is attached to the instant Office action.

**Drawings**

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the reference number 71 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The applicant refers to a reference number 71 on page 21 paragraph 68 line 1; however, the feature is not shown on any of the drawings.

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 4, and 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yamane U.S. Patent No. 5,748,206.

Yamane shows a carriage driving apparatus comprising a motor (motor 18) for driving a carriage (carriage 14); storage device (consisting ROM 53, Gate array 56, and RAM 54) that store a plurality of sets of parameters necessary for controlling the motor (column 5 lines 37-59). Further Yamane shows a control device (CPU 50) that selects one set of parameters stored by the storage device and controls the motor based on the one set of parameters, wherein one set of parameters to be selected are determined based on the behavior of the carriage in a constant speed area when the carriage is driven by the motor (column 7 lines 9-31).

Regarding claim 3, Yamane teaches how a correction operation in the constant speed period can be implemented with a reference to a moving speed table (column 8 lines 32-52). Yamane teaches how motor is driven with respect to each parameter by using a correction method.

Regarding claim 4, Yamane teaches how the V2min is determined and controlled to be the minimum value of the speed of the carriage within an allowable range (column 9 lines 53-67). Further, the motor is continually monitored that the condition is met throughout the motor operation (column 10 lines 5-9).

Regarding claim 5, Yamane discloses a method whereby when the measured minimum speed is unreliable, the system will formulate a new driving PWM signal (column 10 lines 20-29).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane U.S. Patent No. 5,748,206 as applied to claims 1, and further in view of Kobayashi et al Pub. No. US 2002/0172510 A1

In paragraph 6 above, it is shown how claim 1 limitations were clearly anticipated by Yamane teaching.

Yamane, however, fails to show a set of control parameters that utilize at least two parameters among a P, I, and D gain for controlling the motor by PID control.

Nevertheless, Kobayashi et al shows a system wherein the one set of parameters include at least two parameters among P, I, and D gain for controlling the motor by PID control and a variety of parameters which characterize a driver of the motor (page 5 paragraph 91-103).

Accordingly, It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of PID control as taught by Kobayashi et al into Yamane invention seeking for a robust control system with feed back that could be best achieved by PID controller.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane U.S. Patent No. 5,748,206 as applied to claim 1, and further in view of Kobayashi U.S. Patent No. 5,317,668.

In paragraph 6 above, it is shown how claim 1 limitations were clearly anticipated by Yamane teaching.

Yamane, however, fails to teach how the motor load can be monitored and how the motor load is used as one of the parameters to control the motor.

However, Kobayashi teaches a method that is used to control the printing motor based on the load sustained by the printing motor (column 5 lines 63-65). Further, Kobayashi also teaches how the sensed load can be compared to a stored load profile in order to select appropriate driving parameters from a table stored in memory (column 5 lines 56-68, and column 6 lines 10-58).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the methods and apparatuses of Kobayashi into Yamane invention. The motivation being that determining and utilizing motor load as an input parameters to a motor control unit aids in controlling the speed of a motor effectively.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane U.S. Patent No. 5,748,206 in view of Otsubo et al U.S. Patent No. 6,411,008 further in view of Kobayashi U.S. Patent No. 5,317,668.

Regarding claim 10, Yamane shows a carriage driving apparatus comprising a motor (motor 18) for driving a carriage (carriage 14); storage device (consisting ROM 53, Gate array 56, and RAM 54) that store a plurality of sets of parameters necessary for controlling the motor (column 5 lines 37-59). Further Yamane shows a control device (CPU 50) that selects one set of parameters stored by the storage device and controls the motor based on the one set of parameters, wherein one set of parameters to be

Art Unit: 2837

selected are determined based on the behavior of the carriage in a constant speed area when the carriage is driven by the motor (column 7 lines 9-31).

Yamane, however, fails to show a temperature detection device that detects the temperature in the vicinity of the drive system of the carriage.

Otsubo et al discloses an invention that uses a temperature detection device that detects the temperature in the vicinity of the motor and uses the information to control the CR motor (column 12 lines 66-67; column 13 lines 1-6; column 15 lines 45-67; column 16 lines 1-30).

The combination of the two patents, however, also fail to teach how the motor load can be monitored and how the motor load is used as one of the parameters to control the motor.

However, Kobayashi teaches a method that is used to control the printing motor based on the load sustained by the printing motor (column 5 lines 63-65). Further, Kobayashi also teaches how the sensed load can be compared to a stored load profile in order to select appropriate driving parameters from a table stored in memory (column 5 lines 56-68, and column 6 lines 10-58).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the methods and apparatuses of Otsubo et al and Kobayashi into Yamane invention. The motivation being that determining and utilizing motor load and motor temperature as an input parameters to a motor control unit aids in controlling the speed and stable operation of a motor effectively.



8. Claim 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane U.S. Patent No. 5,748,206 in view of Otsubo et al U.S. Patent No. 6,411,008 further in view of Kobayashi U.S. Patent No. 5,317,668.

Regarding claim 12, Yamane shows a carriage driving apparatus comprising a motor (motor 18) for driving a carriage (carriage 14); storage device (consisting ROM 53, Gate array 56, and RAM 54) that store a plurality of sets of parameters necessary for controlling the motor (column 5 lines 37-59). Further Yamane shows a control device (CPU 50) that selects one set of parameters stored by the storage device and controls the motor based on the one set of parameters, wherein one set of parameters to be selected are determined based on the behavior of the carriage in a constant speed area when the carriage is driven by the motor (column 7 lines 9-31).

Yamane, however, fails to teach how the motor load can be monitored and how the motor load is used as one of the parameters to control the motor.

Nevertheless, Kobayashi teaches a method that is used to control the printing motor based on the load sustained by the printing motor (column 5 lines 63-65). Further, Kobayashi also teaches how the sensed load can be compared to a stored load profile in order to select appropriate driving parameters from a table stored in memory (column 5 lines 56-68, and column 6 lines 10-58).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the methods and apparatuses of Kobayashi into Yamane invention. The motivation being that determining and utilizing motor load

as an input parameters to a motor control unit aids in controlling the speed of a motor effectively.

Regarding claim 13, Yamane and Kobayashi patent combination as described above fails to teach how the temperature in the vicinity of the drive system of the motor is detected and utilized in a manner taught in this application. However, Otsubo et al discloses an invention that uses a temperature detection device that detects the temperature in the vicinity of the drive system of the carriage and uses the information to control the CR motor (column 12 lines 66-67; column 13 lines 1-6; column 15 lines 45-67; column 16 lines 1-30).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the methods and apparatuses of Otsubo et al into the combination of Yamane and Kobayashi patents as described above. The motivation being that determining and utilizing motor load and motor temperature as an input parameters to a motor control unit aids in controlling the speed of a motor effectively in the face of varying environmental and other factors.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane U.S. Patent No. 5,748,206 as applied to claim 1 above, and further in view of Otsubo et al U.S. Patent No. 6,411,008.

In paragraph 6 above, it is shown how claim 1 limitations were clearly anticipated by Yamane teaching.

Regarding claim 7, Yamane fails to show how temperature detected in the vicinity of the drive system by the temperature detection device can be part of the set of

parameters and that the control device selects the parameter that refers to the temperature detected by the temperature detection device.

However, Otsubo et al discloses a system where the temperature detected near the drive system by the temperature detection device is one of the sets of parameters. This parameter is stored in memory and is used by the control device to control the motor (column 5 lines 56-68, and column 6 lines 10-58).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the methods and apparatuses of Otsubo et al into Yamane invention. The motivation being that determining and utilizing motor load and motor temperature as an input parameters to a motor control unit aids in controlling the speed of a motor effectively.

**Allowable Subject Matter**

10. Claim 8, 9, and 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to attached PTO-892 form.

**Remarks**

12. No claims are allowed. Three claims are objected. Ten claims are rejected.

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**Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias B. Hiruy whose telephone number is 571-272-6105. The examiner can normally be reached on 7AM- 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571) 272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EH

03/29/2005



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